

Chemical Analysis Report

SE-DIST-2016-02-10-01

Florida Department of Environmental Protection
Central Laboratory
2600 Blair Stone Road
Tallahassee, FL 32399-2400
DOH Accreditation E31780

Event Description: **SMP with Feb TREND**

Request ID: **RQ-2016-02-01-58**

Customer: **SE-DIST**

Project ID: **SMP**

Send Reports to:

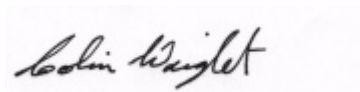
FL Dept. of Environmental Protection
FL Dept. of Environmental Protection
2199 South Rock Road
Fort Pierce, FL 34945
Attn: Jordan Skaggs

For additional information please contact

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Certified by: Colin Wright, Environmental Administrator

Date Certified: 02-MAR-2016 11:42

A handwritten signature in black ink, appearing to read "Colin Wright", is written on a light-colored rectangular background.

Case Narrative

Unless otherwise noted, all samples included in this report were received in accordance with protocols referenced in Chapter 62-160, Florida Administrative Code (F.A.C.). Results published in this report pertain only to the samples as submitted to, and received by the laboratory. All times in this report are adjusted to the applicable Eastern Time Zone (EST or EDT).

Results for the following analytical groups are included in this report: Metals and Nutrients.

Scientific notation may be used in reporting very large or small values. Values reported using scientific notation will take the form of the following example: 1.3E+03, which is equivalent to 1.3×10^3 or 1300.

Unless otherwise noted, analytical values for soil and sediment samples are reported on a dry weight basis, and analytical values for waste and tissue samples are reported on a wet weight basis.

Results for TNI accredited tests met requirements established by The NELAC Institute. A double asterisk (**) is used to indicate an analyte/matrix/method for which the laboratory is not TNI accredited or where accreditation for that field of testing is not applicable.

Any significant anomalies or deviations from established protocols are documented in Non-Conformance Reports, which, where appropriate, are included within this analytical report. Additional comments related to specific analytical tests may be included as remarks following the analytical results for each sample. Such comments and remarks are for informational purposes only and are not intended to convey judgement about the usability of the reported data.

A quality control report on the performance of the test method for the submitted samples is included. Uncertainty associated with the analytical results contained in this report can be estimated from the reported quality assurance results and from published quality control acceptance limits for each analytical test. Matrix quality control results (matrix spike recoveries and matrix sample precision) pertain only to the matrix sample tested and do not necessarily reflect test method performance for other samples.

Typical matrix quality control (QC) measurements may include matrix spike recovery, matrix spike duplicate recovery, matrix spike precision and matrix sample precision. Not all matrix QC results may be available or reportable; where they are not an explanation is provided. Typical reasons for unavailable QC results include, but are not limited to, a) insufficient matrix sample to perform some or all QC measurements; b) analyte concentration in the sample replicated was too low for a meaningful measurement of precision and c) analyte concentration in the matrix sample spiked was too high (relative to the amount of analyte spiked) for a meaningful measurement of recovery. Where matrix QC results are unavailable, other method performance metrics (e.g., LCS recovery, LCS precision, surrogate recovery) may be used to assess performance of the method. Comments explaining any missing QC measurements are not intended to convey any adverse conclusions about the quality of the reported data.

Precision is reported as relative percent difference unless otherwise noted.

Quality Control codes as defined below may be used in this report to indicate results that are associated with one or more quality control elements which did not fall within established test method criteria. Such results may be qualified as estimates using a J qualifier as required by 62-160 F.A.C. Explanations are included in the report for any results that were reported as estimates for other reasons.

QC Codes used in this report may include:

- LCS – Recovery for the batch Laboratory Control Sample (LCS) was outside existing control limits;
- MS – Recovery for the batch matrix spike (MS) was outside existing control limits;
- CCV – Recovery for a continuing calibration verification (CCV) standard was outside existing control limits;
- SUR – Recovery of a surrogate (SUR) for associated analytes was outside existing control limits;
- RPD – The precision, measured as relative percent difference (RPD), of batch replicate measurements was outside existing control limits;
- RSD – The precision, measured as relative standard deviation (RSD), of batch replicate measurements was outside existing control limits;
- SMP – Sample - used precision derived from replicate analyses of a sample;

The following data qualifiers are used, where applicable, in this report as specified in 62-160 F.A.C.

- A - Value reported is the mean of two or more determinations.
- B - Results based on colony counts outside the acceptable range.
- I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- J - Estimated value and/or the analysis did not meet established quality control criteria.
- K - Actual value is known to be less than value given.
- L - Actual value is known to be greater than value given.
- N - Presumptive evidence of presence of material.
- O - Sampled, but analysis lost or not performed.
- Q - Sample held beyond normal holding time.
- T - Value reported is less than the criterion of detection.
- U - Material was analyzed for but not detected. The reported value is the method detection limit for the sample analyzed.
- V - Analyte was detected in both sample and method blank.
- X - Too few individuals to calculate SCI value.
- Y - The laboratory analysis was from an unpreserved or improperly preserved sample. The data may not be accurate.
- Z - Colonies were too numerous to count (TNTC).

Quality control information from overflow laboratories may not be included in this report. Please refer to the associated report from the overflow laboratory for additional information.

Sample Location: N FORK NEW RIVER @ STRUCTURE 3276

Collection Date/Time: 02/09/2016 16:00

Field ID: 42009011_

Matrix: W-SURF-FRH

Sample ID	Ref. Method	Component	Result	Code	Units	Batch ID	QC Codes
1770223	EPA 180.1 Rev. 2.0	Turbidity	0.75		NTU	P298418	
	EPA 300.0 Rev. 2.1	Chloride	32		mg Cl/L	P298614	
	SM 2120 B	Color (true)	23		PCU	P298411	
	SM 2320 B-97	Total Alkalinity	119		mg CaCO3/L	P298807	
	SM 2540 C-97	TDS	176	A	mg/L	P298991	
	SM 2540 D-97	TSS	3	I	mg/L	P298985	
	SM 4500 F-C-97	Fluoride	0.14		mg F/L	P298797	
1770224	EPA 350.1 Rev. 2.0	Ammonia-N	0.009		mg N/L	P298872	
	EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	0.66		mg N/L	P298759	
	EPA 353.2 Rev. 2.0	NO2NO3-N	0.005	I	mg N/L	P298658	
	EPA 365.1 Rev. 2.0	Total-P	0.014		mg P/L	P298638	
	SM 5310 B-00	Organic Carbon	6.6		mg C/L	P298680	
1770225	EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	0.004	U	mg P/L	P298404	
1770228	EPA 200.7 Rev. 4.4	Calcium	43.0		mg/L	P298479	
		Iron	30	U	ug/L	P298479	
		Magnesium	4.23		mg/L	P298479	
		Potassium	1.6		mg/L	P298479	
		Sodium	21.3		mg/L	P298479	
		Zinc	6.2	I	ug/L	P298479	
	EPA 200.8 Rev. 5.4	Arsenic	0.71		ug/L	P298479	
		Cadmium	0.020	U	ug/L	P298479	
		Chromium	0.16	I	ug/L	P298479	
		Copper	2.44		ug/L	P298479	
		Lead	0.061	I	ug/L	P298479	
		Nickel	0.24		ug/L	P298479	
		Silver	0.0050	U	ug/L	P298479	

Ref. Method and Comment:

SM 2540 D-97: The precision data is unavailable due to the low analyte concentration in the QC sample.

EPA 200.7 Rev. 4.4: The calcium matrix spike recovery data for one of two spiked samples is unavailable due to high analyte concentration in the QC sample.

Quality Assurance Report Method Blank Results

Reference Method: EPA 180.1 Rev. 2.0

Batch ID: P298418

Component	Result	Code	Units
Turbidity	0.10	U	NTU

Reference Method: EPA 200.7 Rev. 4.4

Batch ID: P298479

Component	Result	Code	Units
Calcium	0.075	U	mg/L
Iron	30	U	ug/L
Magnesium	0.040	U	mg/L
Potassium	0.30	U	mg/L

Quality Assurance Report Method Blank Results

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P298479

Component	Result	Code	Units
Sodium	0.50	U	mg/L
Zinc	5.0	U	ug/L

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P298479

Component	Result	Code	Units
Arsenic	0.050	U	ug/L
Cadmium	0.020	U	ug/L
Chromium	0.050	U	ug/L
Copper	0.10	U	ug/L
Lead	0.050	U	ug/L
Nickel	0.050	U	ug/L
Silver	0.0050	U	ug/L

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298614

Component	Result	Code	Units
Chloride	0.20	U	mg Cl/L

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298872

Component	Result	Code	Units
Ammonia-N	0.002	U	mg N/L

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298759

Component	Result	Code	Units
Kjeldahl Nitrogen	0.080	U	mg N/L

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298658

Component	Result	Code	Units
NO2NO3-N	0.004	U	mg N/L

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298638

Component	Result	Code	Units
Total-P	0.002	U	mg P/L

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298404

Component	Result	Code	Units
O-Phosphate-P	0.004	U	mg P/L

Quality Assurance Report Method Blank Results

Reference Method: SM 2120 B
Batch ID: P298411

Component	Result	Code	Units
Color (true)	2.5	U	PCU

Reference Method: SM 2320 B-97
Batch ID: P298807

Component	Result	Code	Units
Total Alkalinity	0.65	U	mg CaCO ₃ /L

Reference Method: SM 2540 C-97
Batch ID: P298991

Component	Result	Code	Units
TDS	15	U	mg/L

Reference Method: SM 2540 D-97
Batch ID: P298985

Component	Result	Code	Units
TSS	2	U	mg/L

Reference Method: SM 4500 F-C-97
Batch ID: P298797

Component	Result	Code	Units
Fluoride	0.035	U	mg F/L

Reference Method: SM 5310 B-00
Batch ID: P298680

Component	Result	Code	Units
Organic Carbon	0.50	U	mg C/L

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P298479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Calcium	104		P	85 - 115
Iron	108		P	85 - 115
Magnesium	114		P	85 - 115
Potassium	107		P	85 - 115
Sodium	104		P	85 - 115
Zinc	99.6		P	85 - 115

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P298479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Arsenic	96.5		P	85 - 115

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P298479

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Cadmium	100		P	85 - 115
Chromium	99.1		P	85 - 115
Copper	92.4		P	85 - 115
Lead	90.5		P	85 - 115
Nickel	94.8		P	85 - 115
Silver	96.0		P	85 - 115

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298614

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298872

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Ammonia-N	98.3		P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298759

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Kjeldahl Nitrogen	96.9		P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298658

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
NO ₂ NO ₃ -N	104		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298638

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total-P	102		P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298404

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
O-Phosphate-P	103		P	90 - 110

Reference Method: SM 2320 B-97
Batch ID: P298807

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Total Alkalinity	101		P	95 - 105

Quality Assurance Report Laboratory Control Sample Accuracy

Reference Method: SM 4500 F-C-97
Batch ID: P298797

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Fluoride	96.5		P	94 - 108

Reference Method: SM 5310 B-00
Batch ID: P298680

Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
Organic Carbon	93.4		P	85 - 115

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P298479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770077	Iron	103		P	80 - 120
1770077	Magnesium	106		P	80 - 120
1770077	Potassium	112		P	80 - 120
1770077	Sodium	109		P	80 - 120
1770077	Zinc	97.7		P	80 - 120
1770219	Calcium	99.9		P	80 - 120
1770219	Iron	104	103	P/P	80 - 120
1770219	Magnesium	106	103	P/P	80 - 120
1770219	Potassium	111	108	P/P	80 - 120
1770219	Sodium	100		P	80 - 120
1770219	Zinc	97.5	97.9	P/P	80 - 120

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P298479

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770077	Arsenic	97.7		P	80 - 120
1770077	Cadmium	99.1		P	80 - 120
1770077	Chromium	99.4		P	80 - 120
1770077	Copper	88.3		P	80 - 120
1770077	Lead	90.3		P	80 - 120
1770077	Nickel	91.4		P	80 - 120
1770077	Silver	96.3		P	80 - 120
1770219	Arsenic	97.7	96.9	P/P	80 - 120
1770219	Cadmium	101	100	P/P	80 - 120
1770219	Chromium	101	99.5	P/P	80 - 120
1770219	Copper	89.0	88.0	P/P	80 - 120
1770219	Lead	92.0	91.3	P/P	80 - 120
1770219	Nickel	91.5	90.5	P/P	80 - 120
1770219	Silver	96.1	97.0	P/P	80 - 120

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770428	Chloride	99.3		P	90 - 110

Quality Assurance Report Matrix Spike Accuracy

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298614

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770445	Chloride	101		P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298872

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770233	Ammonia-N	100	99.7	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298759

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770224	Kjeldahl Nitrogen	92.3	97.1	P/P	90 - 110

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298658

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770224	NO2NO3-N	104	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298638

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770170	Total-P	97.6	100	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298404

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770225	O-Phosphate-P	101	103	P/P	90 - 110

Reference Method: SM 4500 F-C-97
Batch ID: P298797

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770213	Fluoride	101	102	P/P	94 - 107

Reference Method: SM 5310 B-00
Batch ID: P298680

Spiked Sample	Component	% Rec.1	% Rec.2	Pass/Fail	Control Limits
1770193	Organic Carbon	94.0	93.5	P/P	85 - 115

Quality Assurance Report Precision

Quality Assurance Report Precision

Reference Method: EPA 180.1 Rev. 2.0
Batch ID: P298418

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770230	Turbidity	4.18	Sample	P	0 - 20

Reference Method: EPA 200.7 Rev. 4.4
Batch ID: P298479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770219	Calcium	1.21	Spike	P	0 - 20
1770219	Iron	0.731	Spike	P	0 - 20
1770219	Magnesium	1.18	Spike	P	0 - 20
1770219	Potassium	2.18	Spike	P	0 - 20
1770219	Sodium	1.48	Spike	P	0 - 20
1770219	Zinc	0.292	Spike	P	0 - 20

Reference Method: EPA 200.8 Rev. 5.4
Batch ID: P298479

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770219	Arsenic	0.803	Spike	P	0 - 20
1770219	Cadmium	0.707	Spike	P	0 - 20
1770219	Chromium	1.08	Spike	P	0 - 20
1770219	Copper	1.05	Spike	P	0 - 20
1770219	Lead	0.740	Spike	P	0 - 20
1770219	Nickel	1.16	Spike	P	0 - 20
1770219	Silver	0.957	Spike	P	0 - 20

Reference Method: EPA 300.0 Rev. 2.1
Batch ID: P298614

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770428	Chloride	1.05	Sample	P	0 - 20

Reference Method: EPA 350.1 Rev. 2.0
Batch ID: P298872

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770233	Ammonia-N	0.762	Spike	P	0 - 20

Reference Method: EPA 351.2 Rev. 2.0
Batch ID: P298759

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770224	Kjeldahl Nitrogen	3.20	Spike	P	0 - 20

Quality Assurance Report Precision

Reference Method: EPA 353.2 Rev. 2.0
Batch ID: P298658

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770224	NO2NO3-N	0.471	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0
Batch ID: P298638

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770170	Total-P	1.99	Spike	P	0 - 20

Reference Method: EPA 365.1 Rev. 2.0 dissolved
Batch ID: P298404

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770225	O-Phosphate-P	1.18	Spike	P	0 - 20

Reference Method: SM 2120 B
Batch ID: P298411

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770230	Color (true)	0.938	Sample	P	0 - 20

Reference Method: SM 2320 B-97
Batch ID: P298807

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770213	Total Alkalinity	0.869	Sample	P	0 - 4.8

Reference Method: SM 2540 C-97
Batch ID: P298991

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770223	TDS	5.68	Sample	P	0 - 10

Reference Method: SM 4500 F-C-97
Batch ID: P298797

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770213	Fluoride	0.979	Spike	P	0 - 3.7

Reference Method: SM 5310 B-00
Batch ID: P298680

Replicated Lab Sample	Component	% RSD/RPD	Sample/Spike/LCS*	Pass/Fail	Control Limits
1770193	Organic Carbon	0.496	Spike	P	0 - 20

Quality Assurance Report Precision

* Sample, spike and/or laboratory control sample precision (LCS) is reported.
Replicate spike precision may be reported when sample results are below quantifiable levels.

Quality Assurance Report Calibration Verification

Reference Method: EPA 300.0 Rev. 2.1

Run ID: A67519

Included Lab Sample IDs: 1770223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Chloride	97.6	99.1	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0 dissolved

Run ID: A67554

Included Lab Sample IDs: 1770225

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
O-Phosphate-P	99.1	99.0	P/P	90 - 110

Reference Method: SM 2120 B

Run ID: A67555

Included Lab Sample IDs: 1770223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Color (true)	95.9	99.9	P/P	90 - 115

Reference Method: EPA 180.1 Rev. 2.0

Run ID: A67557

Included Lab Sample IDs: 1770223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Turbidity	100	99.5	P/P	95 - 105

Reference Method: EPA 353.2 Rev. 2.0

Run ID: A67618

Included Lab Sample IDs: 1770224

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
NO2NO3-N	103	104	P/P	90 - 110

Reference Method: SM 5310 B-00

Run ID: A67629

Included Lab Sample IDs: 1770224

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Organic Carbon	92.7	93.2	P/P	90 - 110

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A67636

Included Lab Sample IDs: 1770228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Calcium	97.5	97.6	P/P	90 - 110
Iron	99.0	98.0	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.7 Rev. 4.4

Run ID: A67636

Included Lab Sample IDs: 1770228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Magnesium	99.0	97.9	P/P	90 - 110
Potassium	98.8	98.9	P/P	90 - 110
Sodium	98.2	96.8	P/P	90 - 110
Zinc	102	104	P/P	90 - 110

Reference Method: EPA 365.1 Rev. 2.0

Run ID: A67645

Included Lab Sample IDs: 1770224

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total-P	98.5	99.0	P/P	90 - 110

Reference Method: SM 4500 F-C-97

Run ID: A67660

Included Lab Sample IDs: 1770223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Fluoride	99.5	99.0	P/P	90 - 110

Reference Method: SM 2320 B-97

Run ID: A67665

Included Lab Sample IDs: 1770223

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Total Alkalinity	103	98.1	P/P	90 - 110

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A67675

Included Lab Sample IDs: 1770228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Arsenic	99.2	98.9	P/P	90 - 110
Cadmium	102	102	P/P	90 - 110
Chromium	104	104	P/P	90 - 110
Copper	95.9	94.7	P/P	90 - 110
Lead	95.5	95.8	P/P	90 - 110
Nickel	96.5	95.6	P/P	90 - 110

Reference Method: EPA 351.2 Rev. 2.0

Run ID: A67677

Included Lab Sample IDs: 1770224

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Kjeldahl Nitrogen	102	103	P/P	90 - 110

Reference Method: EPA 350.1 Rev. 2.0

Run ID: A67680

Included Lab Sample IDs: 1770224

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Ammonia-N	99.4	100	P/P	90 - 110

Quality Assurance Report Calibration Verification

Reference Method: EPA 200.8 Rev. 5.4

Run ID: A67725

Included Lab Sample IDs: 1770228

Component	% Rec.1	% Rec.2	Pass/Fail*	Control Limits
Silver	97.7	97.6	P/P	90 - 110

* Pass/Fail determinations are made for each bracketing calibration verification check.
Control limits for initial calibration checks may be different from those for continuing checks, depending on method requirements.
Where they are different, both control limits are provided.

Quality Assurance Report Summary

Ref. Method	Analyte	LCS % Recovery	MS % Recovery			LCS	Precision SMP	MS
EPA 180.1 Rev. 2.0	Turbidity						4.18	
EPA 200.7 Rev. 4.4	Calcium	104		99.9				1.21
	Iron	108	103	104	103			0.731
	Magnesium	114	106	106	103			1.18
	Potassium	107	112	111	108			2.18
	Sodium	104	109	100				1.48
	Zinc	99.6	97.7	97.5	97.9			0.292
EPA 200.8 Rev. 5.4	Arsenic	96.5	97.7	97.7	96.9			0.803
	Cadmium	100	99.1	101	100			0.707
	Chromium	99.1	99.4	101	99.5			1.08
	Copper	92.4	88.3	89.0	88.0			1.05
	Lead	90.5	90.3	92.0	91.3			0.740
	Nickel	94.8	91.4	91.5	90.5			1.16
	Silver	96.0	96.3	96.1	97.0			0.957
EPA 300.0 Rev. 2.1	Chloride	101	99.3	101			1.05	
EPA 350.1 Rev. 2.0	Ammonia-N	98.3	100	99.7				0.762
EPA 351.2 Rev. 2.0	Kjeldahl Nitrogen	96.9	92.3	97.1				3.20
EPA 353.2 Rev. 2.0	NO2NO3-N	104	104	104				0.471
EPA 365.1 Rev. 2.0	Total-P	102	97.6	100				1.99
EPA 365.1 Rev. 2.0 dissolved	O-Phosphate-P	103	101	103				1.18
SM 2120 B	Color (true)						0.938	
SM 2320 B-97	Total Alkalinity	101					0.869	
SM 2540 C-97	TDS						5.68	
SM 4500 F-C-97	Fluoride	96.5	101	102				0.979
SM 5310 B-00	Organic Carbon	93.4	94.0	93.5				0.496

Reference Method Descriptions

Method / DoH Cert #	Description	Associated Samples
EPA 180.1 Rev. 2.0 / E31780	Turbidity in aqueous matrices	1770223
EPA 200.7 Rev. 4.4 / E31780	Total Recoverable Metals analysis using ICP emission spectroscopy for aqueous samples supporting Clean Water Act Projects	1770228
EPA 200.8 Rev. 5.4 / E31780	Total Recoverable Metals analysis using ICP-MS for aqueous samples supporting Clean Water Act Projects	1770228
EPA 300.0 Rev. 2.1 / E31780	Chloride in aqueous matrices	1770223
EPA 350.1 Rev. 2.0 / E31780	Ammonia in aqueous matrices as mg N/L	1770224

Reference Method Descriptions

Method / DoH Cert #	Description	<u>Associated Samples</u>
EPA 351.2 Rev. 2.0 / E31780	Total Kjeldahl Nitrogen in aqueous matrices	1770224
EPA 353.2 Rev. 2.0 / E31780	Nitrite/Nitrate in aqueous matrices as mg N/L	1770224
EPA 365.1 Rev. 2.0 / E31780	Total Phosphorus in aqueous matrices as mg P/L	1770224
EPA 365.1 Rev. 2.0 dissolved / E31780	Ortho-phosphate, dissolved, in filtered, aqueous matrices as mg P/L	1770225
SM 2120 B / E31780	True Color measured at 450 nm	1770223
SM 2320 B-97 / E31780	Alkalinity in aqueous matrices as mg CaCO ₃ /L	1770223
SM 2540 C-97 / E31780	Total Dissolved Solids in aqueous matrices	1770223
SM 2540 D-97 / E31780	Total Suspended Solids in aqueous matrices	1770223
SM 4500 F-C-97 / E31780	Fluoride in aqueous matrices, without distillation (not valid for NPDES monitoring)	1770223
SM 5310 B-00 / E31780	Nonpurgeable Organic Carbon in aqueous matrices	1770224

Preparation and Analysis Log

Ref. Method	Received Date	Prep Date/Time	Prepared By	Analysis Date/Time	Analyzed By	Associated Samples
EPA 180.1 Rev. 2.0	02/10/2016			02/10/2016 15:11	Sima Feizi	1770223
EPA 200.7 Rev. 4.4	02/10/2016	02/11/2016	Elliott D. Healy	02/16/2016	Joshua Ayres	1770228
EPA 200.8 Rev. 5.4	02/10/2016	02/11/2016	Elliott D. Healy	02/18/2016	Charles J. Peterson	1770228
	02/10/2016	02/11/2016	Elliott D. Healy	02/19/2016	Charles J. Peterson	1770228
EPA 300.0 Rev. 2.1	02/10/2016			02/13/2016	Ping Hua	1770223
EPA 350.1 Rev. 2.0	02/10/2016			02/18/2016	Diana M. Turner	1770224
EPA 351.2 Rev. 2.0	02/10/2016	02/17/2016	Sofia Elnemr	02/18/2016	Bryan A. Werth	1770224
EPA 353.2 Rev. 2.0	02/10/2016			02/16/2016	Peter D. Kaus	1770224
EPA 365.1 Rev. 2.0	02/10/2016	02/16/2016	Christopher Armour	02/17/2016	Lipi Saha	1770224
EPA 365.1 Rev. 2.0 dissolved	02/10/2016			02/10/2016 13:43	Bryan A. Werth	1770225
SM 2120 B	02/10/2016			02/10/2016 13:34	Rochelle Y Jackson	1770223
SM 2320 B-97	02/10/2016			02/15/2016	Dale L. Simmons	1770223
SM 2540 C-97	02/10/2016			02/12/2016	Yijie Li	1770223
SM 2540 D-97	02/10/2016			02/12/2016	Yijie Li	1770223
SM 4500 F-C-97	02/10/2016			02/15/2016	Dale L. Simmons	1770223
SM 5310 B-00	02/10/2016			02/16/2016	Sofia Elnemr	1770224